

This is **TRW**

Thompson Ramo Wooldridge Inc. is a company diversified in the automotive, aerospace and electronic fields. Its 30,000 employees are engaged in research, development and manufacturing activities in 40 plants and laboratories located in 13 states and 10 countries. Four major groups of decentralized divisions produce products and services that generate annual sales of more than one-half billion dollars.

Ever since carriages went out of style, the ways and means of motion have been the primary concern of TRW, a company that has played a pioneering role in four major industries born in this century.

● *TRW grew up with the automobile age.* It was founded in 1901 as the Cleveland Cap Screw Company, making bolts by welding the head to a stem of finished dimensions. The firm's growth was stimulated by a new automotive engine valve design. Charles E. Thompson, for whom the company later was named Thompson Products, Inc., led the way to such innovations as the first one-piece forged valve in 1917 and the durable Silcrome valve in 1921.

During the past half-century the company has consistently developed products that have become industry standards — from improved valves and piston rings to extended-life steering linkage and ball joint suspension systems. Today TRW makes engine or chassis parts for every American-built car on the road. One-third of the company's automotive business is tied to passenger cars, another third is in replacement parts, with the balance spread over trucks, tractors, buses, marine engines, off-highway vehicles and other heavy-duty equipment.

This product mix also includes impact-forged pistons (which were used in 9 out of the 12 cars that finished in the 1964 Indianapolis Race), power steering and transmission pumps, ball and roller bearings and turbochargers.

● *TRW went aloft with the aircraft age in 1915.* Success in the automotive engine field led logically to the fledgling aircraft engine market and to breakthroughs such as the hollow, chemically-cooled valves which helped Lindberg fly the Atlantic in 1927. The Thompson Trophy Race, an annual closed-course air event that started in 1929, focused the national spotlight on the company's aircraft products.

During World War II it was Thompson's sodium-cooled valves and booster pumps that raised aircraft performance, and after the war the company's metallurgical and metal-working skills led to an early role in the mass production of precision-forged turbine blades, buckets, vanes and other jet engine components.

Today TRW engine parts or fuel pumps are on board nearly every commercial and military aircraft. By full exploitation of its technological talents, the company's Tapco Plant has become the largest, most diversified aerospace/defense facility in the Cleveland area. In addition to aircraft parts, this operation is the number one producer of rocket nozzles for missiles and space boosters, and also supplies "power for peace" in the form of auxiliary power systems, reaction controls, nuclear components, fluid systems, torpedo propulsion systems, materials technology, small arms and other ordnance hardware.

● *TRW entered the electronics age in 1950.* Starting with the manufacture of a coaxial switch, the company has progressed, through product development and acquisition, to a

position of leadership in a number of military and commercial markets. Major product lines include convergence coil assemblies for color TV sets, capacitors for electric organs, tuners for auto radios and military communications, and diodes and transistors for missile and space applications. Advanced research in microelectronics is expected to pave the way to new space-age breakthroughs.

● *TRW actually helped launch the space-age.* In 1953 Thompson Products financed the formation of The Ramo-Wooldridge Corporation of Los Angeles, which in 1954 was selected by the Air Force to direct the development of the nation's ballistic missile programs. This major responsibility led to the establishment of the R-W Guided Missile Research Division, which ultimately became TRW Space Technology Laboratories. The 1958 merger of Thompson Products and its affiliate, Ramo-Wooldridge, brought the TRW name into being and the company has since grown with the national missile and space effort.

Today TRW is the 43rd largest Department of Defense contractor and among the top 15 contractors to the National Aeronautics and Space Administration. The company continues its systems engineering and technical direction of the Air Force's Atlas, Titan and Minuteman missile programs, and ranks as one of the nation's leading designers and manufacturers of spacecraft systems and subsystems.

Since 1957 the company has participated in nearly every manned and unmanned space project. Currently it has prime responsibility for NASA's Orbiting Geophysical Observatory (OGO) and Interplanetary Pioneer spacecraft and the Air Force's Nuclear Detection Satellites, the first arms control system to function successfully in space. TRW is deeply involved in the Gemini and Apollo manned space programs and is making important technological contributions to the development of sophisticated communications satellites such as Relay, Syncom and COMSAT.

TRW deals with every branch of the military, NASA, AEC and most of their principal suppliers, but no one government contract or program accounts for as much as 10% of total business. In its drive for balanced diversification, TRW is also emphasizing commercial and industrial products, and for the first time since World War II, sales in these classifications are running ahead of defense and space sales by 53% to 47%.

TRW is also participating in the growth of automotive and electronics markets in Mexico, Canada, Argentina, Brazil, West Germany, France, Japan, England, Australia and Switzerland. The company expects its international markets to double by 1970.

Guiding this expansion is a top policy group composed of J. D. Wright, Board Chairman and Chief Executive Officer; Dr. Simon Ramo, one of the country's foremost scientists, Vice Chairman; and H. A. Shepard, President. Dave Wright's cherished goal is an annual sales volume of \$1 billion by his retirement year of 1970. In 1933, when Wright joined the company as assistant to president Frederick C. Crawford (who is now Chairman of the TRW Executive Committee), the company sales were only \$3 million.

TRW's history is a portrait of challenge and change. The past six decades have produced a spirited and creative organization dedicated to extending man's capabilities for travel and communication and providing vital support for the defense of the nation and the exploration of space.